

# PATENT SPECIFICATION

Inventor: LEONARD GEORGE OXFORD

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## COMPLETE SPECIFICATION

### Improvements relating to Self-Locking Nuts and like Internally Screw-Threaded Members

We, SIMMONDS ACCESSORIES LIMITED, a British company, of Treforest Trading Estate, Near Pontypridd, Glamorganshire, do hereby declare the invention, for which we pray that a patent may be granted to us, and the method by which it is to be performed, to be particularly described in and by the following statement:—

- 10 This invention relates to self-locking nuts and internally screw-threaded members (hereinafter referred to as a nut) of the kind comprising a nut body having a screw-threaded bore and, at one end of the nut body, a recess which is in the shape of a cylinder or other figure of revolution and in which is housed a correspondingly-shaped insert of hard elastic material that has a bore therethrough aligned with the bore of the nut body but of less diameter than the maximum diameter of the thread of the bore of the nut body, the insert, when the nut is screwed on to a co-operating bolt or like externally-threaded member (hereinafter referred to as a bolt), being impressed with the thread of the bolt whereby the nut is locked to the bolt against unintentional relative rotary movement due to vibration, shocks and the like.

In nuts of the above kind it is customary to key the elastic insert to the nut body to prevent relative rotary movement therebetween and it is the object of this invention to provide an improved method of manufacturing a nut of the above kind in which the elastic insert is keyed to the nut body.

According to our invention the end wall of the said recess in the nut body is formed with a longitudinally-extending annular boss, and a plurality of spaced sections of the said boss is flattened or upset against the said end wall of the

recess so that the remaining projecting portions of the boss form a plurality of spaced upstanding lugs or keys which are caused to penetrate into the elastic insert when it is inserted into its recess in the nut body.

The said annular boss is preferably formed to extend intermediately of the said end wall of the recess in the nut body and may be upset by the application to such boss of a suitably-shaped punch to provide four, six or any other desired number of lugs or keys. The end wall of the said recess may be plane and extend at right angles to the axis of the nut or it may be conical.

The elastic insert may consist of nylon, hard vulcanized fibre, or other suitable material having elastic properties.

After the insert has been inserted into its recess with the said lugs or keys penetrating into the insert, the insert is secured in its recess against axial withdrawal by an intumed edge portion of the wall of the nut body defining said recess.

Our invention is illustrated in the accompanying drawing, in which

Figure 1 is a top plan view of one form of nut body at one stage in its manufacture;

Figure 2 is a central vertical sectional view of the nut body shown in Figure 1;

Figure 3 is a view similar to that of Figure 1 illustrating the next step in the manufacture of the nut body, and

Figure 4 is a central vertical sectional view of the completely manufactured nut.

As shown in Figures 1 and 2, a nut blank, which may be of hexagonal or other desired outline, is bored, counter-bored and tapped to provide a nut body 1 having a screw-threaded bore 2 and a

counterbore or cylindrical recess 3, the end wall 4 of which has upstanding therefrom intermediately thereof the annular boss 5. In the next step in the manufacture of the nut body spaced sections of the boss 5 are flattened or upset against the end wall 4 by means of a punch to provide a plurality of upstanding keys or lugs 6, as shown in Figure 3.

10 In the following stages in the manufacture of the nut, an annular disc 7 of elastic material is inserted into recess 3 so that the keys 6 penetrate into the locking collar 7 to prevent it rotating in the recess and the locking collar is secured in its recess against axial withdrawal by the

15 turned free edge portion 8 of the side wall of the recess, as shown in Figure 4.

What we claim is:—

20 1. The method of manufacturing a self-locking nut of the kind hereinbefore specified, which comprises forming the end wall of the recess in the nut body with a longitudinally-extending annular

boss, flattening or upsetting against the said end wall a plurality of spaced sections of said boss to form a plurality of spaced lugs or keys upstanding from said end wall, and inserting the elastic insert into said recess so that said lugs or keys

25 penetrate into the elastic insert.

2. The method according to Claim 1, wherein the said annular boss is formed to extend intermediately of the said end wall of the recess.

3. The method of manufacturing a self-locking nut of the kind hereinbefore specified, substantially as hereinbefore described and as shown in the accompanying drawing.

4. Self-locking nuts made by the method of manufacture claimed in any of the preceding claims.

PHILIP S. ALLAM,  
Chartered Patent Agent,  
2 and 3, Norfolk Street, Strand,  
London, W.C.2,  
Agent for the Applicants.

#### PROVISIONAL SPECIFICATION

#### Improvements relating to Self-Locking Nuts and like Internally Screw-Threaded Members

We, SIMMONDS AEROCESORIES LIMITED, a British company, of Treforest Trading Estate, Near Pontypridd, Glamorganshire, do hereby declare the nature of this invention to be as follows:—

50 This invention relates to self-locking nuts and like internally screw-threaded members (hereinafter referred to as a nut) of the kind comprising a nut body having a screw-threaded bore and a counterbore at one end thereof forming a cylindrical recess in which is housed a correspondingly shaped insert of hard elastic material that has a bore there-through aligned with the bore of the nut

55 body but of less diameter than the maximum diameter of the thread of the bore of the nut body, the insert, when the nut is screwed on to a co-operating bolt or like externally-threaded member

60 (hereinafter referred to as a bolt), being impressed with the thread of the bolt whereby the nut is locked to the bolt against unintentional relative rotary movement due to vibration, shocks and the like.

70 In nuts of the above kind it is customary to key the elastic insert to the nut body to prevent relative rotary movement therebetween and it is the object of this invention to provide an improved method of keying the elastic insert to the

nut body.

According to my invention the end wall of the said cylindrical recess in the nut body is formed with a narrow longitudinally-extending annular boss, and a plurality of spaced sections of the said wall is flattened or upset against the said end wall of the recess so that the remaining projecting portions of the wall form

80 a plurality of spaced lugs or keys which penetrate into the elastic insert when it is inserted into the counterbore.

The said annular boss is preferably formed to extend intermediately of the said end wall of the cylindrical recess in the nut body and may be upset by the application to such boss of a suitably shaped punch to provide four or any other desired number of lugs or keys.

85 The end wall of the said cylindrical recess may be plane and extend at right angles to the axis of the nut or it may be conical.

The elastic insert preferably consists of nylon but it may consist of hard vulcanized fibre or other suitable material having elastic properties.

After the insert has been inserted into its recess with the said lugs or keys penetrating into the insert, it is secured in its recess against axial withdrawal by an

90 turned edge portion of the wall of the nut body defining said cylindrical recess.

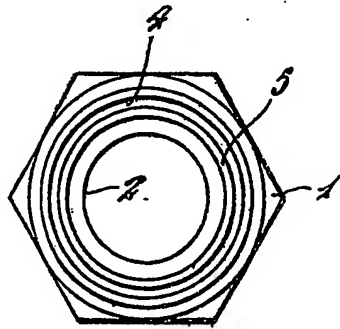
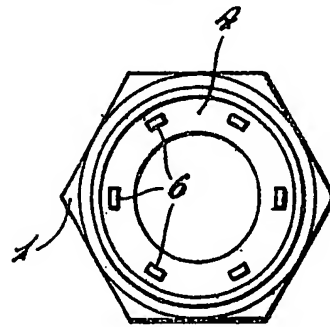
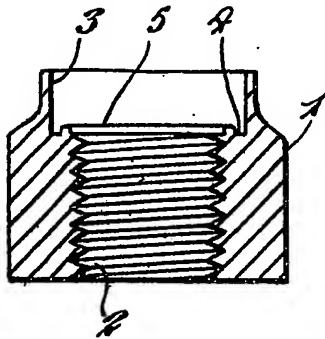
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PHILIP S. ALLAM,  
Chartered Patent Agent,  
2 and 3, Norfolk Street, Strand,  
London, W.C.2,  
Agent for the Applicants.

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*This Drawing is a reproduction of the Original on a reduced scale*

*Fig. 1.**Fig. 3.**Fig. 2.**Fig. 4.*